



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/761,287	01/16/2001	Colin C. Davis	10003590-1	5570

22879 7590 04/20/2009
HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

DEMILLE, DANTON D

ART UNIT	PAPER NUMBER
----------	--------------

3771

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

04/20/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

JERRY.SHORMA@HP.COM
ipa.mail@hp.com
jessica.l.fusek@hp.com

Office Action Summary	Application No. 09/761,287	Applicant(s) DAVIS, COLIN C.	
	Examiner Danton DeMille	Art Unit 3771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9,10,13-17 and 19-21 is/are pending in the application.
- 4a) Of the above claim(s) 1-6 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7,9,10,13-17 and 19-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 recites that a distance between the upper surface of the chamber and the outer surface is less than 0.75 times “the square root of the heat transducer”. It is not clear what number is intended to comprehend “the heat transducer” in order to take the square root thereof.

Claim Rejections - 35 USC § 103

Claims 7, 9, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higgins et al. (US 5,666,977) in view of Byron et al. (US 2004/0016427).

Higgins teaches a method of generating droplets comprising providing a supply of liquid 28, configuring liquid-holding chambers 51 including orifices 53, filling the chambers with liquid, FIG. 4B, providing a planar heat transducer 57 in each chamber 51 wherein the planar heat transducer is oriented in a plane substantially perpendicular to the trajectory of the propelled liquid, FIG. 4E, instantaneously heating the liquid in the chambers by an amount sufficient to produce a vapor bubble in each chamber for propelling liquid from each chamber, column 5, lines 62-column 6, line 6. While Higgins may not teach a specific drop volume required for their invention such is well within the realm of the artisan of ordinary skill in the art dependent on practical considerations of intended use. Providing a smaller drop volume would result in a finer mist for better dispersal. Byron teaches the aerosol particles are to be less than 2 microns in diameter, paragraph 74, which would result in volumes less than the claimed 100 femtoliters. It

would have been obvious to one of ordinary skill in the art to modify Higgins to produce a drop volume of less than 100 femtoliters as taught by Byron to provide a finer mist of material for better dispersal.

Claims 10, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claim 7 above, and further in view of Weber et al. (US 6,354,694).

Weber teaches, for example, in the art of generating droplets using a planar heat transducer at the bottom of each chamber that is perpendicular to the trajectory of the propelled liquid, there is no unobviousness to having more than one orifice per chamber as shown in figures 3A-3C, for example.

Regarding claim 10, it would have been obvious to one of ordinary skill in the art to further modify Higgins to use multiple orifices per chamber as taught by Weber to simplify the manufacturing process.

Regarding claim 14, Weber also teaches propelling droplets along separate trajectories that diverge in the direction away from the orifices as shown in figure 13, for example. it would have been obvious to one of ordinary skill in the art to further modify Higgins to diverge the trajectories away from the orifices as taught by Weber to prevent the droplets from merging in flight.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higgins et al. (US 5,666,977) in view of Merrill (US 6,299,270).

As noted above, Higgins teaches providing a supply of liquid, filling chambers with some of the liquid, providing a planar heat transducer within each chamber substantially perpendicular to the trajectory, instantaneously heating the liquid to produce a vapor bubble in each chamber

that propels the liquid from the chamber through the orifice. While Higgins may not teach propelling two or more droplets upon exiting the orifice Merrill teaches this does happen from an ordinary orifice, column 1, lines 23-29. It would have been obvious to one of ordinary skill in the art to modify Higgins to note that two or more droplets are propelled upon exiting the orifice as taught by Merrill.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claim 15 above, and further in view of Byron et al. (US 2004/0016427).

It would have been obvious to one of ordinary skill in the art to modify Higgins to produce a drop volume of less than 100 femtoliters as taught by Byron to provide a finer mist of material for better dispersal.

Claims 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wirch et al. in view of Phillips.

Wirch teaches, for example, a body in figure 1, a supply of medicinal liquid 5 carried in the body, a drop generator head 8, a plurality of ducts or chambers 11, a plurality of heat transducers 14 associated with each chamber 11 for heating the liquid in the chambers to evaporate in a vapor bubble propelling from each chamber. Wirch teaches an inhaler in figure 1. Inherently there would have to be a mouthpiece for the patient in order to inhale the medicament. However, applicant argues that the prior art does not teach adding a mouthpiece to assist inhalation by the user. Phillips teaches the convention of providing a mouthpiece 12 to the end of the inhaler to assist inhalation by the user. It would have been obvious to one of ordinary skill

in the art to further modify Wirsch to include a mouthpiece as taught by Phillips for the patient to use during the process of inhaling the medicament.

Allowable Subject Matter

Claim 17 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Response to Arguments

Applicant's arguments with respect to claims 7, 9, 10, 13-17, 19-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 3771

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Danton DeMille whose telephone number is (571) 272-4974.

The examiner can normally be reached on M-F from 8:30 to 6:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Justine Yu, can be reached on (571) 272-4835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

16 April 2009

/Danton DeMille/

Danton DeMille
Primary Examiner
Art Unit 3771